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MONTHLY PROGRESS REPORT NO. 15
for the period May 1-31, 1977
to
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-1946

Colorado C-b Tract

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MONTHLY PROGRESS REPORT NO. 15
for the period May 1-31, 1977
to
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

1860 Lincoln St., Suite 900
Denver, CO 80203

Contract No. 68-01-1946

by

Aeromet, Inc.
Box FF
Norman, OK 73070

Colorado C-b Tract

1.0 INTRODUCTION

Low level temperature and wind data were collected for May, 1977 at Casper, Wyoming; near the Colorado C-b Tract 25 miles west of Rio Blanco, Colorado; Craig, Colorado; Escalante and Hanksville Utah; Rock Springs, Wyoming; and the U-a/U-b Tract 5 miles south of Bonanza, Utah. The data collection was made using a 30 gm helium filled pilot balloon with a temperature sonde attached, a single theodolite and a TSR-2 receiver/recorder twice a day every other day. The observations were made ½ hour after sunrise and 1400L.

The pilot balloon had an ascent rate of 500 ft/min and it was tracked by a single theodolite for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on a cassette tape recorder. The tape was transcribed to a pilot balloon form after the observation.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 24 ft. AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-Sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data were mailed to Aeromet, Inc.

The Monthly Progress Report is divided into seven parts, one corresponding to each of the seven field sites. The collected temperature and wind data are accurate and have not been edited unless otherwise stated in the Pilot Balloon Summary Section. However, the obvious errors sometimes found in the recorded azimuth and elevation angles are corrected without mention. For example, the sequence of azimuth angles . . . 76.6, 75.3, 47.8, 73.8 . . . can be corrected without ambiguity. The more ambiguous errors are brought to the attention of the reader if editing has been performed, otherwise, the data are left as recorded and the filtering is left to the individual user. An example is the wind profile for Hanksville on 06/29/76 at 1300 MST found in the Monthly Progress Report No. 4. The azimuth angles starting 30 seconds after the launch and incremented by the same are as follows . . . 109.0, 110.0, 110.0, 281.0, 280.0, 282.0 . . . , while the corresponding elevation angles are as follows, . . . 60.0, 57.6, 58.7, 58.6, 52.7, 44.3 . . . . The wind speed and direction change dramatically over the interval as can be seen in the report since these data were not edited.

2.0 DATA SUMMARY

2.1 Colorado C-b Tract Field Summary

The primary and secondary observers both quit collecting data on 9 May. Numerous attempts were made to talk to the observers, however, neither could be reached. It was not until 1 June that contact was made with the observers and they stated that they got too busy. By 12 May negotiations were being conducted to find a new observer.

Data collection was very poor for the month with the observer only attempting 28% of the scheduled pilot balloon launches resulting in 28% recovery of the temperature data and only 19% recovery of the wind data. A 9% loss in wind data was blamed on strong surface winds.

2.2 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data can not be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height that a variety of "heat island" effects should be viewed. The rigorous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for these analysis 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

The symbol N/D means that no mixing layer height was defined and sfc is the abbreviation for surface.

2.3 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

3.0 DATA PROCESSING

3.1 Printed and Plotted Output

Wind speeds and directions are computed from the azimuth and elevation angles measured while tracking the balloon with the theodolite. The wind speed and direction are plotted versus height and printed out at 30 second intervals. The printed output includes the AGL and MSL height of the calculated wind value and the orthogonal components of the wind. The wind profile is also punched on computer cards at 30 second intervals.

The temperature data are processed and plotted with the temperature and the lapse rate per 300 meters versus height at 15 second intervals. Tic marks are placed on the temperature plot at significant levels. A solid line to the right side of the plot indicates the data for that layer are interpolated temperature values. The temperature data are also printed out and punched on cards. The asterisk beside a height value indicates a significant level while a "?" indicates interpolated data.

The temperature data are also processed to produce for each site a monthly summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classification scheme for inversions (Holzworth, G.C., 1974: "Climatological Data on Atmospheric Stability in the United States" Paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974. Santa Barbara, California.)

The temperature and wind data are processed together to produce for each site a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the $\Delta T/100m$ criterion is met but the wind speed criterion is not met, then the

STABILITY CLASS	ΔT (°C/100m)	WIND SPEED
A	<-1.9	≤ 2
B	-1.9 - -1.7	≤ 5
C	-1.7 - -1.5	≤ 6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤ 5
F	>1.5	≤ 3

wind data are checked against the criterion for the next stability class, always cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example,

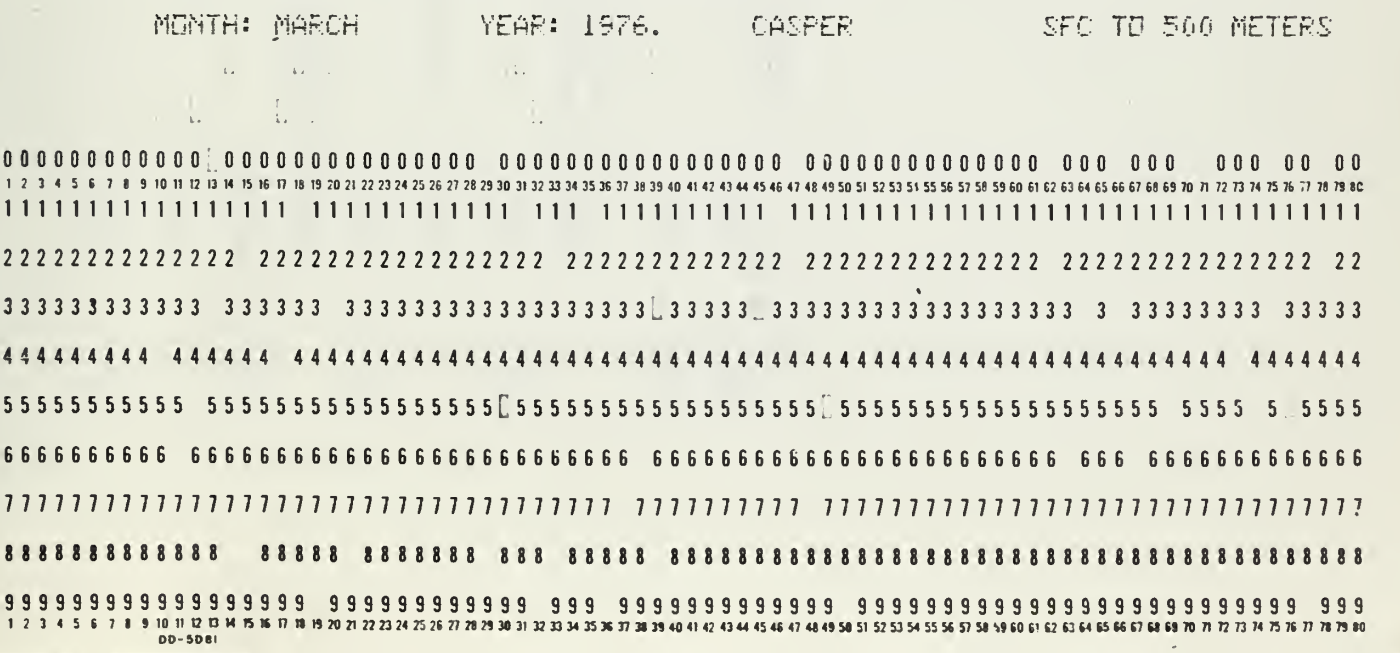
if the $\Delta T/100m$ value is 1.7 and the wind speed is 7 m/s, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 m/s maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100 m and a wind speed value of 7 m/s are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce.

3.2 Punched Output

The punched temperature and wind data for each observation are categorized into four groups, each separated by a blank card. The first group begins with a header card listing the station name (3A4), the station elevation in meters (I4), the month, date and year (I6), the observation time (I4), the time zone (A3), the balloon ascent rate in feet per minute (I3), the sampling interval in seconds (I2), the temperature error in °C (F5.1), the T-Sonde I.D. number (I5) and the surface wind speed in kts and direction (2F6.1). A surface wind speed of 180.0 KTS indicates missing surface wind data. The series of cards prior to the first blank card include on each card the elapse time in minutes (2X,F5.1), the height of the balloon in meters AGL (4X,F5.0), the height of the balloon in meters MSL(4X,F5.0), the temperature in °C (4X,F6.2), the change in temperature between standard or significant levels (2X,F6.2), the lapse rate per 300m (2X,F6.2), the difference in the lapse rate per 300m and the dry adiabatic lapse rate per 300m (2X,F6.2), the wind speed in m/s if known (4X,F5.1), and the wind direction if known (3X,F5.0). The cards following the first blank card include on each card the elapse time in minutes (2X,F5.1), the height in meters AGL (4X,F5.0), the height in meters MSL (4X,F5.0), the u-component of the wind in m/s (4X,F6.1), the v-component of the wind in m/s (6X,F6.1), the wind speed in m/s (7X,F5.1), the wind direction (6X,F5.0), the elevation angle in degrees (F5.1) and the azimuth angle in degrees (F5.1). The cards after the second blank card include a header card like before and a series of cards with four groups of the following on each card; the height in meters AGL (F6.1), the temperature in °C (F6.2), the lapse rate °C/300m (F6.2) and a blank space (1X). The cards after the third blank card include a header card the same as described earlier, eight cards with the original digitized temperature data and a flag to indicate interpolated data (20(F3.1,I1)), five cards with the elevation angle in degrees (16F5.1), and five cards with the azimuth angle in degrees (16F5.1). The temperature data are in degrees Celsius and have 50°C added to each value. An elevation angle of 180° indicates a missing azimuth and elevation angle value.

The punched output from the bivariate frequency distribution calculations include a header card as illustrated below,



PILOT BALLOON SUMMARY
Colorado C-b Tract
May, 1977

May 1	0700	
	1240	
May 3	0700	
	1300	No wind observations were taken due to rain showers.
May 5	0700	
	1300	No wind data was taken after 2 minutes because of extremely strong surface winds.
May 7	0700	
	1300	No wind data was obtained because strong winds made the recording tape very hard to understand.
May 9	0700	
May 9 through May 31	AFTN	No attempt was made by the observer to conduct the pibal launches. Negotiations were taking place to find a new observer.

AVERAGE MIXING LAYER HEIGHT

Colorado C-b Tract

May 1977

HEIGHT IN METERS

	MORNING			AFTERNOON		
DATE	0°	+5°	+10°	0°	+5°	+10°
1	sfc	100m	300m	2150m	3150m	N/D
3	sfc	200m	1150m	50m	3550m	N/D
5	sfc	250m	2000m	N/D	N/D	N/D
7	sfc	900m	3000m	3650m	N/D	N/D
9	sfc	2550m	N/D			
11						
13						
15						
17						
19						
21						
23						
25						
27						
29						
31						

CLOUD COVER AND SIGNIFICANT WEATHER

Colorado C-b Tract

May, 1977

DATE	MORNING	AFTERNOON
1	scattered	overcast
3	overcast	overcast; rain shower
5	clear	scattered
7	clear	scattered
9	clear	
11		
13		
15		
17		
19		
21		
23		
25		
27		
29		
31		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4616

DATE 05/01/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	533.	1.45	0.0

****

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4615

DATE 05/01/77 TIME 12:40MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 0M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.68
100.	250.	-0.95
250.	500.	-1.02
500.	750.	-1.00
750.	1000.	-0.93
1000.	1500.	-1.03

****

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4619

DATE 05/03/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	305.	1.69	0.0

****

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4618

DATE 05/03/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.69
100.	250.	-0.90
250.	500.	-1.07
500.	750.	-0.98
750.	1000.	-1.06
1000.	1500.	-0.88

****

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4617

DATE 05/05/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	381.	0.76	0.0

****

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4620

DATE 05/05/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-2.34
100.	250.	-0.95
250.	500.	-1.05
500.	750.	-1.26
750.	1000.	-1.00
1000.	1500.	-0.99

MONTH: MAY YEAR: 1977. COL CB TRACT ELEV 2025 METERS

HOLZWORTHIS CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

THICKNESS (METERS)	INVERSION BASE HEIGHT (M) SFC	1- 100	101- 250	251- 500	501- 750	751- 1000	1000- 1500	1501- 2000	2001- 2500	2501- 3000	TOTAL
1 - 100	1	0	0	0	0	1	0	0	0	0	2
101 - 250	1	0	0	0	0	0	0	0	0	0	1
251 - 500	2	0	0	0	0	0	0	0	0	0	2
501 - 750	1	0	0	0	0	0	0	0	0	0	1
751 - 1000	0	0	0	0	0	0	0	0	0	0	0
1001 - 1500	0	0	0	0	0	0	0	0	0	0	0
> 1500	0	0	0	0	0	0	0	0	0	0	0
INV TOTAL	5	0	0	0	0	1	0	0	0	0	6
**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********
DT/DZ 5		0	0	0	0	0	0	0	0	0	0
FROM INV 4		0	0	0	0	0	0	0	0	0	0
BASE 3		0	0	0	0	1	0	0	0	0	1
TO 2		0	0	0	0	0	0	0	0	0	0
SFC 1		0	0	0	0	0	0	0	0	0	0
**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********
NO INV TOT		3	3	3	3	5	5	DT/DZ (DEG C)/100M			
DT/DZ FOR 5		0	0	0	0	0	0	5= 0.00 TO -0.40			
SAME 4		1	0	0	0	0	0	4=-0.41 TO -0.80			
LAYERS 3		0	3	3	2	3	3	3=-0.81 TO -1.20			
AS INV 2		0	0	0	1	0	0	2=-1.21 TO -1.60			
BASE 1		2	0	0	0	0	0	1=<-1.60			
**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********	**********

MONTH: MAY YEAR: 1977. COL CB TRACT SEC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE A STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: MAY YEAR: 1977. CUL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE B STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: MAY YEAR: 1977. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE C STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: MAY YEAR: 1977. COL CB TRACT SEC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.33	0.33	0.0	0.0	0.0	6.1	0.67
S	0.0	0.0	0.33	0.0	0.0	0.0	6.8	0.33
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	5.8	6.6	0.0	0.0	0.0		0.0
TOTAL	0.0	0.33	0.67	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE D STABILITY CLASS IS 0.50

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: MAY YEAR: 1977. COL CB TRACT SEC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.07	0.0	0.0	0.0	0.0	4.4	0.07
S	0.0	0.33	0.0	0.0	0.0	0.0	3.7	0.33
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	4.1	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	1.00	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE E STABILITY CLASS IS 0.50

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: MAY YEAR: 1977. CDL CB TRACT SEC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE F STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 5 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: MAY YEAR: 1977. COL CB TRACT SEC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.50	0.17	0.0	0.0	0.0	5.2	0.67
S	0.0	0.17	0.17	0.0	0.0	0.0	5.2	0.33
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	4.6	6.6	0.0	0.0	0.0		0.0
TOTAL	0.0	0.67	0.33	0.0	0.0	0.0		1.00

NORMALIZED FREQUENCY DISTRIBUTION INDEPENDENT OF STABILITY

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 3 SOUNDINGS FROM A SAMPLE OF 9 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4616

DATE 05/01/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		8.21		0.0		1.0	90.
1.0	150	2175	14.64	6.43	6.27	9.19	4.2	87.
2.0	300	2325	15.02	0.39	-0.89	2.04	3.1	149.
3.1	475.	2500.	15.92	0.60	1.07	4.00	9.1	172.
3.3	500	2525	15.90	0.27	1.07	4.00	10.0	174.
6.4	975.	3000.	12.83	-3.07	-2.52	0.40	11.5	178.
12.6	1975.	4000.	3.51	-9.32	-3.55	-0.62		
18.8	2975.	5000.	-5.16	-8.67	-2.50	0.43		
24.3	3975.	6000.	-14.83	-9.68	-4.52	-1.59		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4616

DATE 05/01/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2025.	-1.0	-0.0	1.0	90.
0.5	76.	2101.	-2.1	1.1	2.3	117.
1.0	152.	2177.	-4.3	-0.3	4.3	86.
1.5	229.	2254.	-2.6	1.9	3.2	126.
2.0	305.	2330.	-1.5	2.7	3.1	151.
2.5	381.	2406.	-0.7	5.4	5.4	173.
3.0	457.	2482.	-1.3	8.3	8.4	171.
3.5	533.	2558.	-0.7	11.2	11.3	177.
4.0	610.	2635.	-0.0	11.9	11.9	180.
4.5	686.	2711.	-0.7	11.8	11.8	177.
5.0	765.	2790.	-0.3	12.7	12.7	179.
5.5	841.	2866.	-0.1	12.1	12.1	179.
6.0	918.	2943.	-0.2	12.0	12.0	179.
6.5	994.	3019.	-0.4	11.3	11.3	178.
7.0	1070.	3095.	-0.3	11.4	11.4	179.
7.5	1149.	3174.	0.4	10.2	10.2	182.
8.0	1230.	3255.	0.4	10.5	10.5	182.
8.5	1310.	3335.	1.0	9.8	9.8	186.
9.0	1386.	3411.	1.9	8.6	8.8	192.
9.5	1471.	3496.	2.1	9.5	9.7	193.
10.0	1557.	3582.	1.9	8.6	8.8	193.
10.5	1644.	3669.	1.5	8.5	8.6	190.
11.0	1720.	3745.	0.7	8.3	8.4	185.
11.5	1799.	3824.	0.1	8.5	8.5	181.
12.0	1877.	3902.	-0.5	7.2	7.3	176.
12.5	1953.	3978.	0.2	7.0	7.0	181.

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4615

DATE 05/01/77 TIME 12:40MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		17.27		0.0		10.3	180.
0.8	150	2175	14.75	-2.52	-5.36	-2.43	6.3	172.
1.4	300	2325	13.27	-1.47	-5.39	-2.46	7.3	180.
2.0	475.	2500.	10.99	-1.86	-5.09	-2.16	7.2	171.
2.1	500	2525	11.04	-0.37	-5.09	-2.16	7.2	173.
4.1	975.	3000.	6.05	-4.31	-5.00	-2.07	9.5	170.
8.9	1975.	4000.	-3.12	-9.84	-1.91	1.02	12.5	176.
15.4	2975.	5000.	-7.12	-4.00	-2.32	0.61		
21.7	3975.	6000.	-14.84	-7.72	-1.38	1.55		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4615

DATE 05/01/77 TIME 12:40MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2025.	-0.0	10.3	10.3	180.
0.5	76.	2101.	-1.1	5.3	5.4	168.
1.0	205.	2230.	-0.8	6.9	6.9	174.
1.5	337.	2362.	0.2	7.4	7.4	182.
2.0	469.	2494.	-1.2	7.1	7.2	170.
2.5	580.	2605.	-0.2	7.3	7.3	178.
3.0	704.	2729.	-0.3	7.3	7.3	178.
3.5	853.	2878.	-0.4	10.2	10.2	178.
4.0	963.	2988.	-1.4	9.5	9.6	171.
4.5	1059.	3084.	-2.5	7.9	8.3	163.
5.0	1184.	3209.	-5.0	10.7	11.8	155.
5.5	1285.	3310.	-4.3	9.1	10.0	155.
6.0	1371.	3396.	-3.7	7.6	8.5	154.
6.5	1466.	3491.	-2.3	6.5	6.9	160.
7.0	1561.	3586.	-1.8	6.1	6.4	164.
7.5	1681.	3706.	-3.4	9.1	9.7	160.
8.0	1825.	3850.	1.2	15.4	15.4	185.
8.5	1919.	3944.	-0.6	13.4	13.4	178.
9.0	1995.	4020.	-1.1	12.1	12.2	175.
9.5	2072.	4097.	-1.9	12.0	12.2	171.

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4619

DATE 05/03/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		8.58		0.0		2.6	90.
1.0	150	2175	10.98	2.40	4.54	7.47	3.4	93.
2.0	300	2325	13.73	2.75	2.34	5.27	7.5	148.
3.1	475.	2500.	12.28	-0.90	-1.62	1.30	8.2	163.
3.3	500	2525	12.31	-0.52	-1.62	1.30	8.8	164.
6.4	975.	3000.	9.05	-3.26	-2.38	0.55	12.3	186.
12.9	1975.	4000.	1.79	-7.26	-2.44	0.49		
19.4	2975.	5000.	-6.72	-8.51	-3.47	-0.54		
24.0	3975.	6000.	-16.84	-10.12	-2.77	0.16		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4619

DATE 05/03/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2025.	-2.6	-0.0	2.6	90.
0.5	76.	2101.	-3.1	1.9	3.6	121.
1.0	152.	2177.	-3.4	0.1	3.4	92.
1.5	229.	2254.	-4.2	3.9	5.7	133.
2.0	305.	2330.	-3.9	6.5	7.6	149.
2.5	381.	2406.	-3.1	7.1	7.7	156.
3.0	457.	2482.	-2.3	7.4	7.7	162.
3.5	533.	2558.	-2.4	9.3	9.6	166.
4.0	610.	2635.	-1.2	10.0	10.1	173.
4.5	686.	2711.	-1.3	10.4	10.5	173.
5.0	762.	2787.	-0.7	11.3	11.3	176.
5.5	839.	2864.	-0.9	11.0	11.0	175.
6.0	917.	2942.	0.4	13.3	13.4	182.
6.5	993.	3018.	1.5	11.9	12.0	187.
7.0	1069.	3094.	2.7	11.9	12.2	193.
7.5	1147.	3172.	3.4	10.9	11.4	197.
8.0	1223.	3248.	4.5	10.9	11.8	202.
8.5	1299.	3324.	5.3	9.1	10.5	210.
9.0	1376.	3401.	5.4	9.9	11.3	209.
9.5	1452.	3477.	6.1	10.9	12.5	209.
10.0	1528.	3553.	6.7	9.7	11.8	214.
10.5	1604.	3629.	7.5	10.8	13.2	215.
11.0	1680.	3705.	7.8	12.2	14.5	213.
11.5	1757.	3782.	8.1	11.0	13.7	216.
12.0	1833.	3858.	8.8	12.7	15.4	215.

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4618

DATE 05/03/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		17.36		0.0		M	M
1.0	150	2175	16.37	-0.98	-2.31	0.62	M	M
1.9	300	2325	14.68	-1.70	-4.65	-1.72	M	M
2.6	475.	2500.	12.38	-2.30	-6.32	-3.39	M	M
2.6	500	2525	12.34	-0.04	-6.32	-3.39	M	M
4.1	975.	3000.	7.48	-4.85	-5.88	-2.95	M	M
9.6	1975.	4000.	-1.08	-8.56	-3.22	-0.30	M	M
15.0	2975.	5000.	-9.87	-8.79	-3.50	-0.57		
21.4	3975.	6000.	-16.00	-6.17	-2.96	-0.03		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4618

DATE 05/03/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG

THE WIND DATA ARE MISSING

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4617

DATE 05/05/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		5.58		0.0		4.1	120.
1.0	150	2175	6.34	0.75	0.93	3.85	1.3	110.
2.0	300	2325	8.38	2.05	4.23	7.16	2.4	140.
3.1	475.	2500.	7.93	-0.90	-0.74	2.19	9.3	195.
3.3	500	2525	7.90	0.42	-0.74	2.19	9.7	199.
6.2	975.	3000.	3.69	-3.73	-2.61	0.31	16.0	210.
12.1	1975.	4000.	-3.79	-7.96	-3.06	-0.14		
17.5	2975.	5000.	-12.94	-9.15	-2.94	-0.01		
23.7	3975.	6000.	-19.76	-6.82	-1.19	1.74		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4617

DATE 05/05/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2025.	-3.6	2.1	4.1	120.
0.5	76.	2101.	-1.0	0.4	1.1	111.
1.0	152.	2177.	-1.2	0.4	1.3	110.
1.5	229.	2254.	-1.2	1.0	1.6	130.
2.0	305.	2330.	-1.6	1.9	2.5	141.
2.5	381.	2406.	-0.3	6.3	6.3	177.
3.0	457.	2482.	2.0	8.9	9.1	193.
3.5	533.	2558.	4.1	9.3	10.1	204.
4.0	610.	2635.	5.7	10.1	11.6	210.
4.5	686.	2711.	6.5	10.6	12.5	212.
5.0	769.	2794.	7.1	12.6	14.4	209.
5.5	845.	2870.	7.7	12.1	14.3	213.
6.0	930.	2955.	8.5	14.1	16.4	211.
6.5	1024.	3049.	7.5	13.6	15.6	209.
7.0	1108.	3133.	6.9	12.6	14.4	209.
7.5	1184.	3209.	5.9	12.6	13.9	205.
8.0	1260.	3285.	5.8	11.6	12.9	206.
8.5	1396.	3421.	8.2	16.8	18.7	206.
9.0	1507.	3532.	8.0	15.3	17.3	208.
9.5	1583.	3608.	6.7	12.0	13.7	209.
10.0	1662.	3687.	6.9	11.2	13.2	212.
10.5	1738.	3763.	7.1	13.0	14.8	209.
11.0	1814.	3839.	6.6	11.9	13.6	209.
11.5	1890.	3915.	6.5	12.4	14.0	208.
12.0	1967.	3992.	7.1	10.3	12.5	215.

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4620

DATE 05/05/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		18.79		0.0		18.0	180.
0.7	150	2175	15.91	-2.87	-9.12	-6.20	7.9	189.
1.0	300	2325	13.41	-2.51	-10.00	-8.78	7.0	196.
1.3	475.	2500.	12.00	-1.27	-10.00	-7.93	9.2	192.
1.4	500	2525	12.09	-0.05	-10.00	-7.93	9.5	191.
2.3	975.	3000.	6.40	-5.69	-9.80	-6.87	M	M
4.6	1975.	4000.	-3.20	-9.60	-6.49	-3.56	M	M
10.3	2975.	5000.	-11.65	-8.45	-4.49	-1.56	M	M
14.9	3975.	6000.	-20.67	-9.02	-0.60	2.33		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4620

DATE 05/05/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2025.	-0.0	18.0	18.0	180.
0.5	76.	2101.	0.7	8.3	8.4	185.
1.0	306.	2331.	2.0	6.7	7.0	196.
1.5	549.	2574.	1.7	10.0	10.2	189.
2.0	803.	2828.	1.4	9.1	9.2	189.

COL CB TRACT ELEV 2025 METERS SOUNDING ID 3764

DATE 05/07/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		11.08		0.0		2.6	155.
0.8	* 114	2139	13.28		-1.26	1.67		
1.0	150	2175	12.92	1.84	-3.07	-0.14	4.4	151.
1.9	300	2325	11.55	-1.38	-1.81	1.11	7.0	156.
3.1	475.	2500.	10.25	-1.29	-4.94	-2.01	8.8	155.
3.2	500	2525	10.25	-0.01	-4.94	-2.01	10.2	156.
5.6	975.	3000.	6.52	-3.25	-2.59	0.34	15.2	179.
12.0	1975.	4000.	-1.28	-8.28	-2.85	0.08	M	M
18.0	2975.	5000.	-8.39	-7.11	-0.58	2.35		
23.8	3975.	6000.	-15.93	-7.54	-1.38	1.55		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 3764

DATE 05/07/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
0.0	0.	2025.	-1.1	2.3	2.6	155.
0.5	76.	2101.	-1.3	1.9	2.3	146.
1.0	152.	2177.	-2.2	3.9	4.5	151.
1.5	233.	2258.	-2.4	5.0	5.6	154.
2.0	309.	2334.	-2.9	6.6	7.2	156.
2.5	385.	2410.	-3.0	7.2	7.8	157.
3.0	461.	2486.	-3.5	7.3	8.1	154.
3.5	562.	2587.	-4.9	12.5	13.5	159.
4.0	690.	2715.	-4.5	13.3	14.1	161.
4.5	811.	2836.	-3.3	12.4	12.8	165.
5.0	887.	2912.	-0.4	13.0	13.0	178.
5.5	963.	2988.	-0.1	15.3	15.3	180.
6.0	1039.	3064.	-0.3	15.0	15.0	179.
6.5	1116.	3141.	-1.1	16.4	16.5	176.
7.0	1192.	3217.	-2.2	13.9	14.1	171.
7.5	1268.	3293.	-1.9	15.0	15.1	173.
8.0	1344.	3369.	-3.1	15.8	16.1	169.
8.5	1420.	3445.	-3.9	16.9	17.3	167.
9.0	1497.	3522.	-3.6	14.9	15.3	167.
9.5	1580.	3605.	-4.0	16.6	17.1	166.
10.0	1656.	3681.	-2.8	12.6	12.9	168.

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4005

DATE 05/07/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		21.96		0.0		M	M
0.7	150	2175	19.35	-2.62	-3.84	-0.92	M	M
1.4	300	2325	17.50	-1.75	-4.23	-1.30	M	M
2.1	475.	2500.	15.71	-1.88	-5.52	-2.59	M	M
2.2	500	2525	15.67	-0.04	-5.52	-2.59	M	M
4.5	975.	3000.	11.09	-4.59	-3.27	-0.34	M	M
9.3	1975.	4000.	0.94	-10.14	-4.33	-1.40	M	M
12.8	2975.	5000.	-9.84	-10.78	-6.79	-3.86		
18.0	3975.	6000.	-16.83	-7.00	-3.16	-0.23		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4005

DATE 05/07/77 TIME 13:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG

THE WIND DATA ARE MISSING

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4606

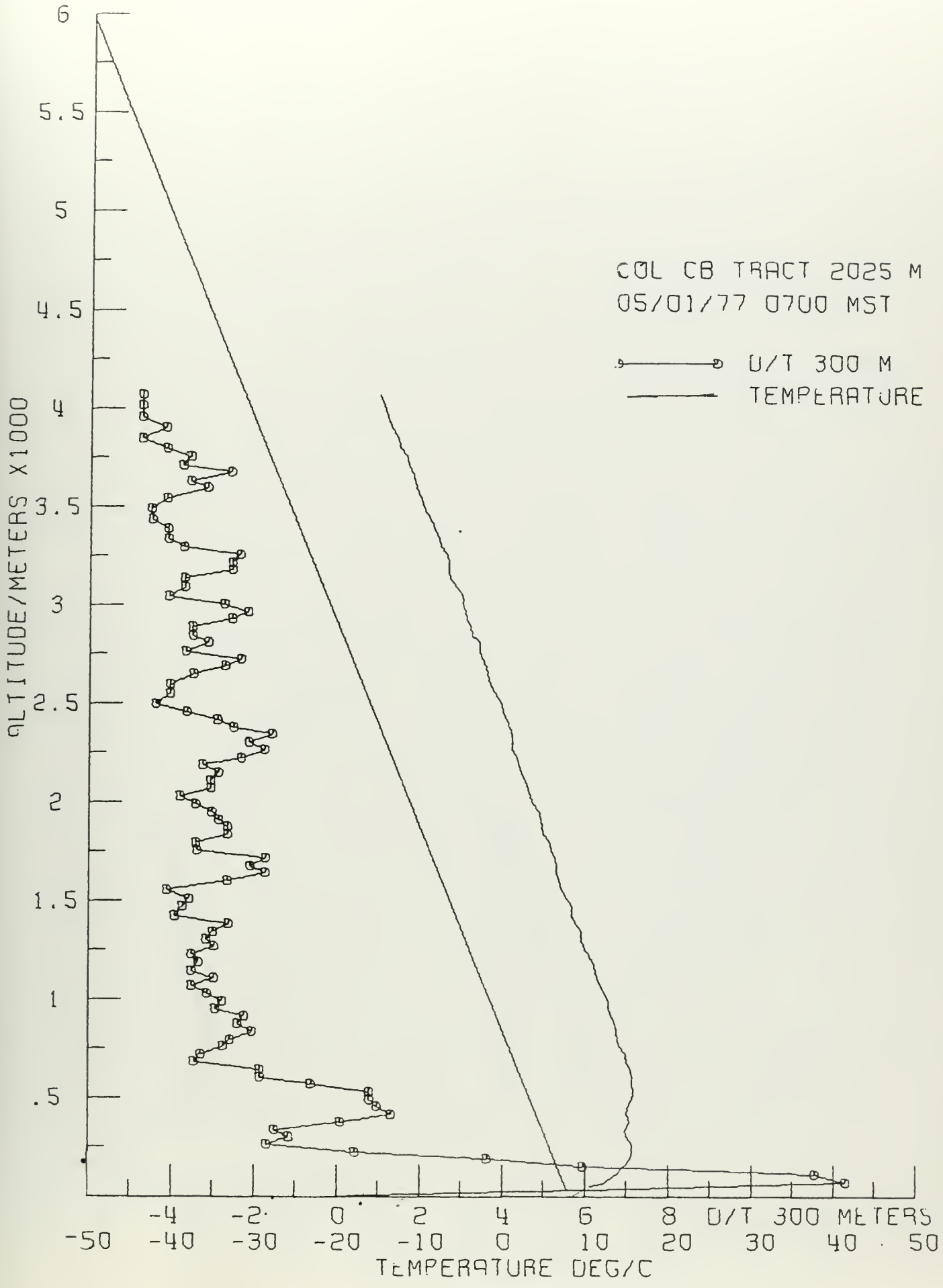
DATE 05/09/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	TEMP DEG C	D/T STD	D/T 300M	D/T LAPSE	WS M/S	WD DEG
	SFC		13.01		0.0		M	M
1.0	150	2175	13.93	0.92	-1.97	0.96	2.7	149.
2.0	300	2325	13.11	-0.82	-1.98	0.95	4.0	150.
3.1	475.	2500.	11.17	-1.54	-3.08	-0.15	7.9	163.
3.3	500	2525	11.20	-0.36	-3.08	-0.15	8.6	165.
6.1	975.	3000.	6.52	-4.57	-4.25	-1.33	10.5	185.
12.1	1975.	4000.	-2.53	-9.16	-2.86	0.07		
18.4	2975.	5000.	-8.69	-6.16	-2.13	0.79		

COL CB TRACT ELEV 2025 METERS SOUNDING ID 4606

DATE 05/09/77 TIME 07:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

TIME MIN	HEIGHT M (AGL)	HEIGHT M (MSL)	U-COMP M/S	V-COMP M/S	WND SPEED M/S	WND DIR DEG
			THE WIND DATA ARE MISSING			
0.5	76.	2101.	-0.8	-0.4	0.9	62.
1.0	152.	2177.	-1.3	2.4	2.8	152.
1.5	229.	2254.	-2.9	3.0	4.1	136.
2.0	305.	2330.	-1.9	3.5	4.0	151.
2.5	381.	2406.	-1.9	6.2	6.4	163.
3.0	457.	2482.	-2.3	7.0	7.3	162.
3.5	540.	2565.	-2.0	9.6	9.8	168.
4.0	617.	2642.	-2.0	8.6	8.8	167.
4.5	693.	2718.	-1.0	8.6	8.6	174.
5.0	776.	2801.	0.4	8.7	8.7	183.
5.5	873.	2898.	0.7	10.6	10.6	184.
6.0	967.	2992.	1.0	10.5	10.5	185.
6.5	1049.	3074.	0.3	10.6	10.6	182.
7.0	1148.	3173.	0.0	12.8	12.8	180.
7.5	1235.	3260.	-0.2	14.0	14.0	179.
8.0	1311.	3336.	0.0	13.0	13.0	180.
8.5	1388.	3413.	-0.2	13.3	13.3	179.
9.0	1464.	3489.	-1.1	14.3	14.3	176.
9.5	1540.	3565.	-2.0	14.3	14.5	172.
10.0	1616.	3641.	-2.6	12.9	13.2	169.
10.5	1702.	3727.	-3.5	13.3	13.8	165.
11.0	1791.	3816.	-3.2	14.2	14.6	167.
11.5	1877.	3902.	-3.8	14.4	14.9	165.
12.0	1964.	3989.	-3.7	15.1	15.5	166.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05/01/77 0700 MST
U/T 300 M
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ALTITUDE/METERS X1000
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5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
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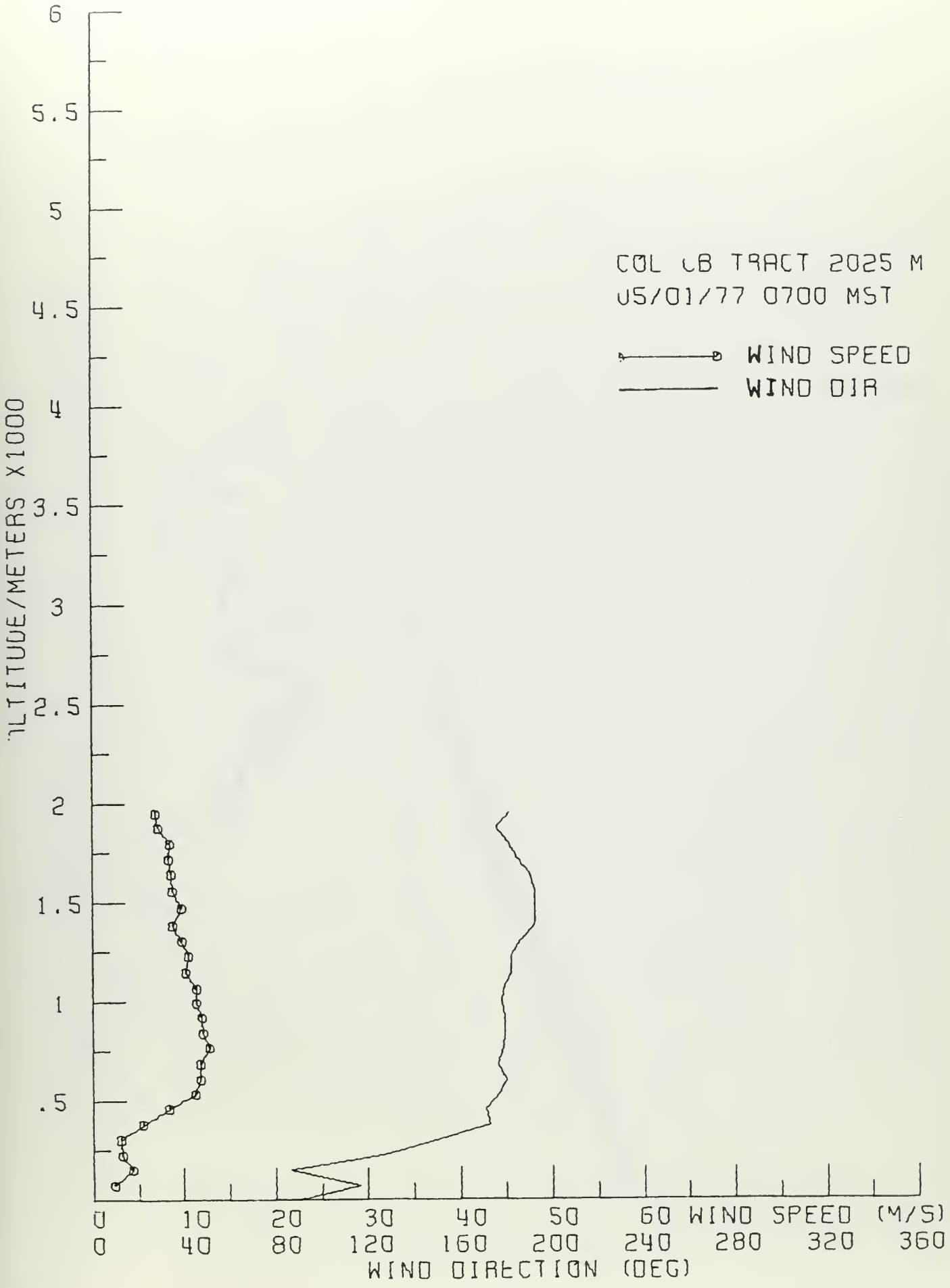
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C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05/01/77 0700 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
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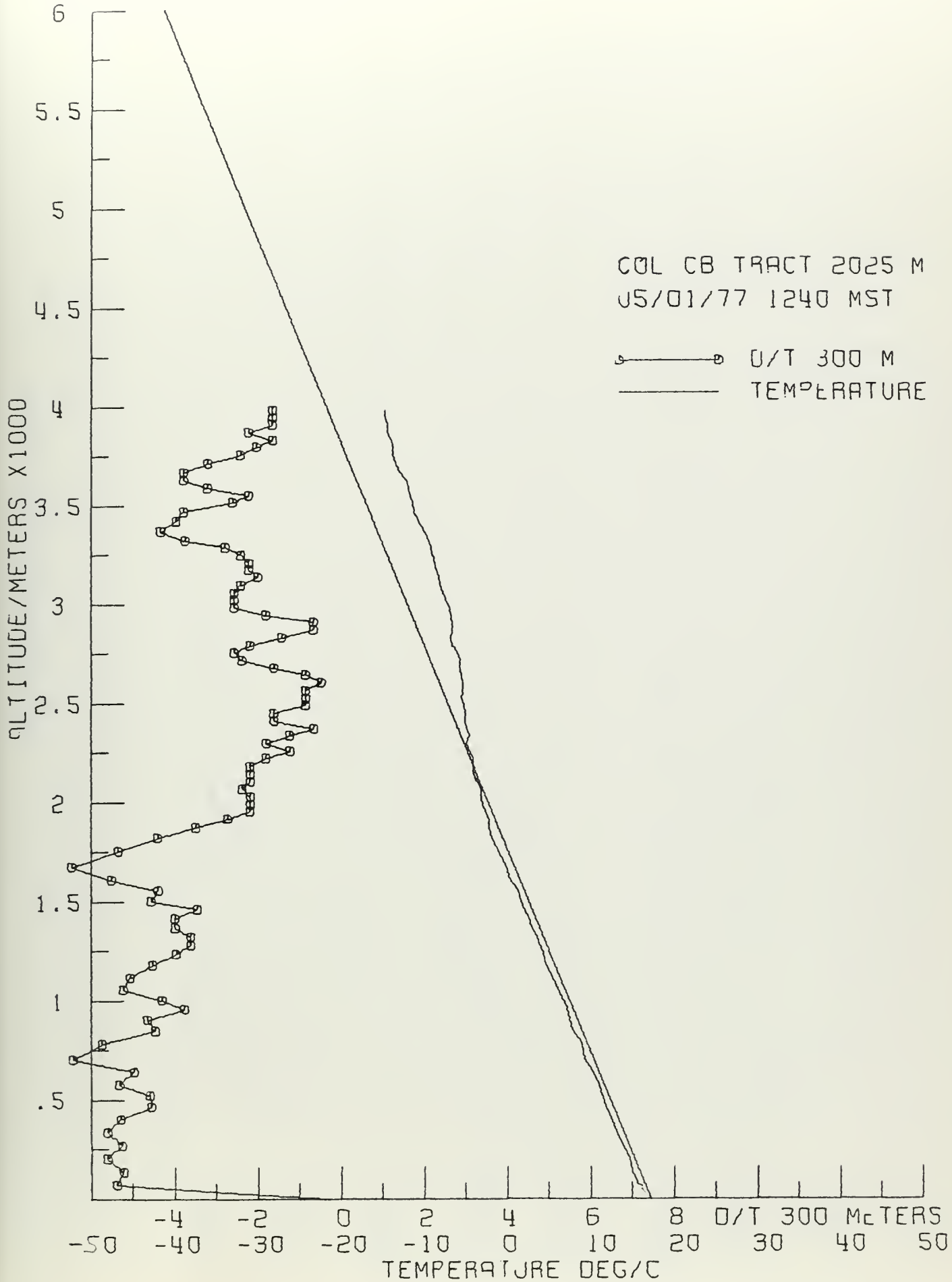
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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05/01/77 1240 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 McTERS
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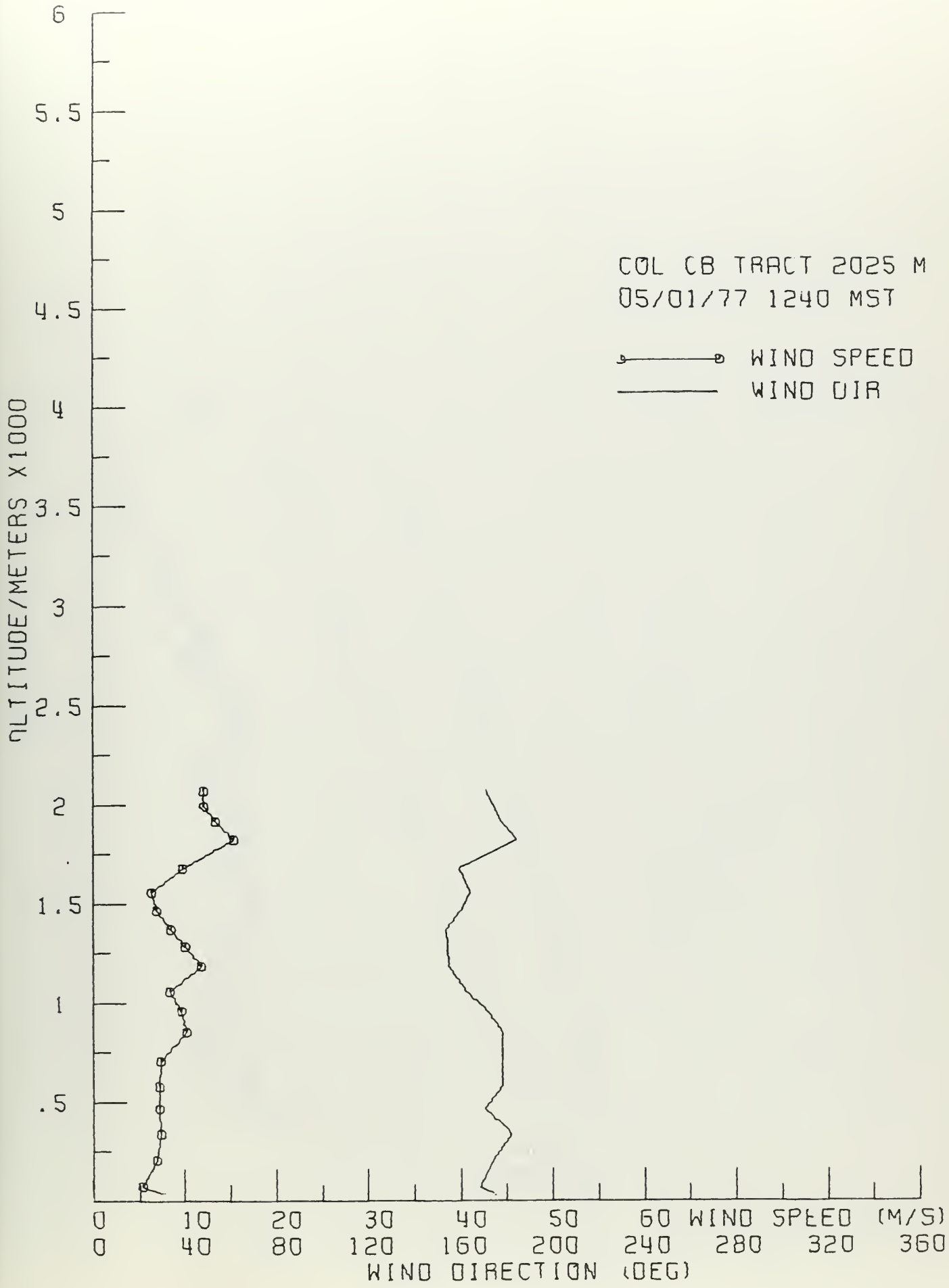
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C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05/01/77 1240 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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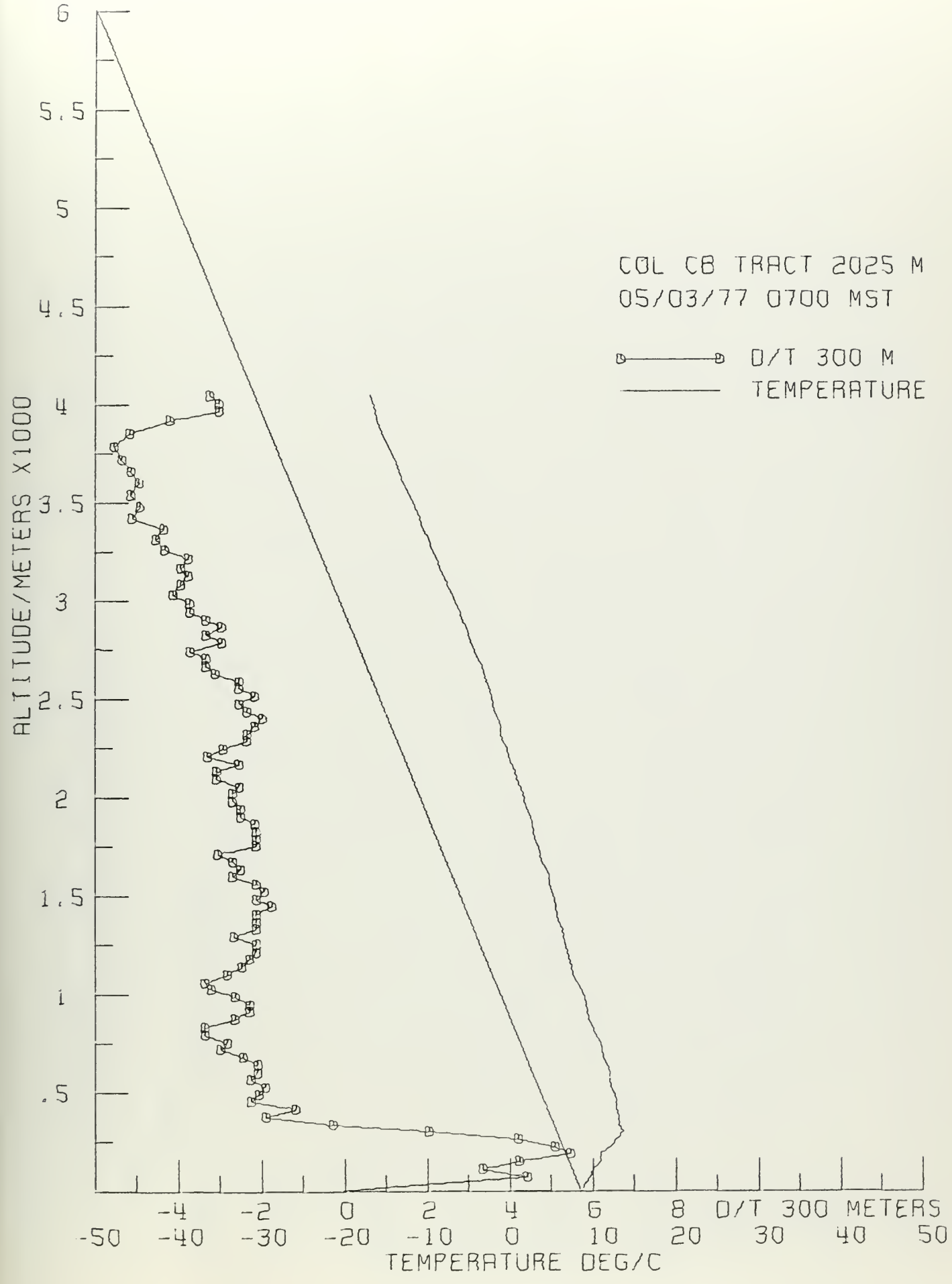
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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05/03/77 0700 MST
O/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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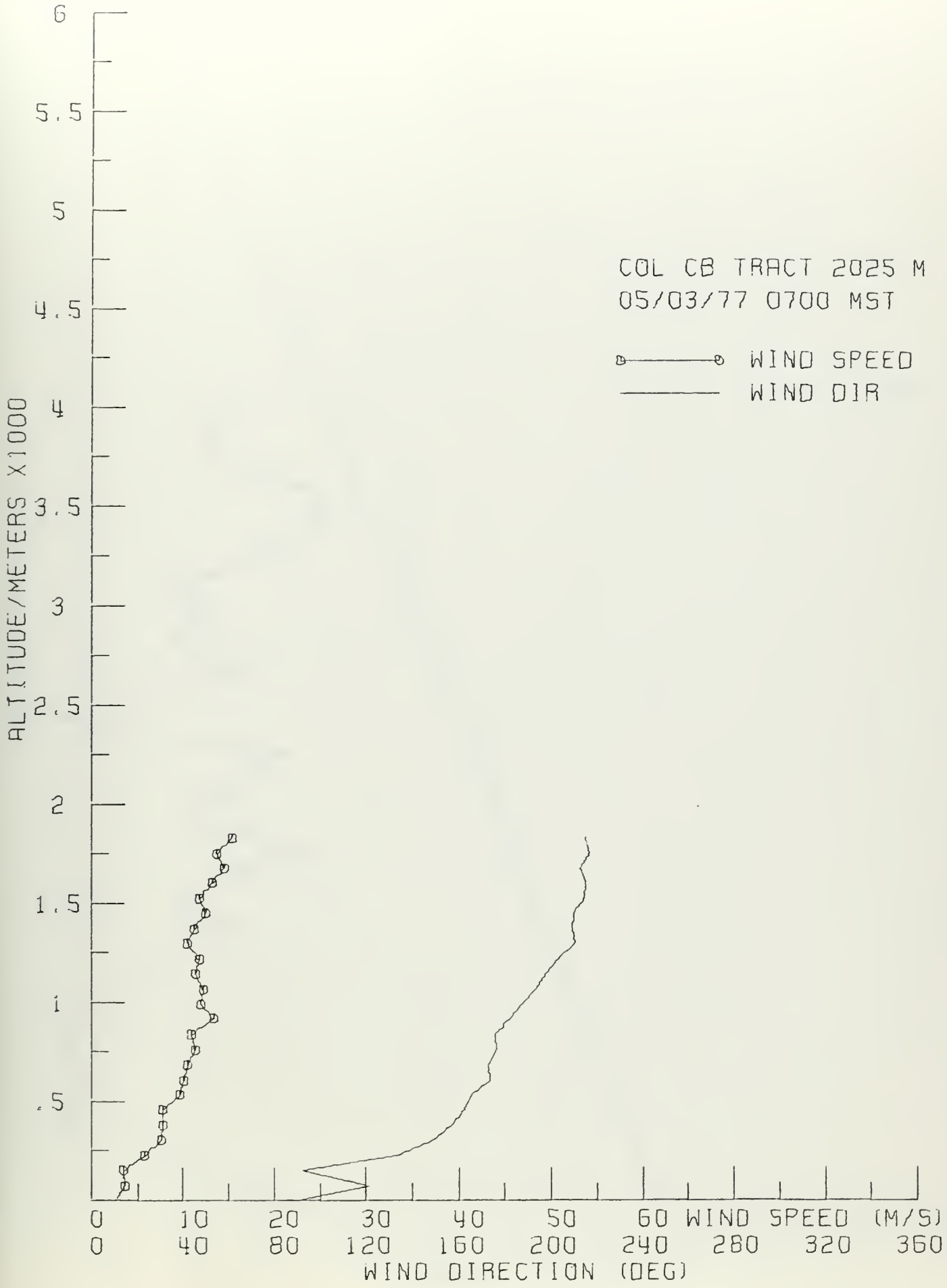
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
O/T 300 METERS
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C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05/03/77 0700 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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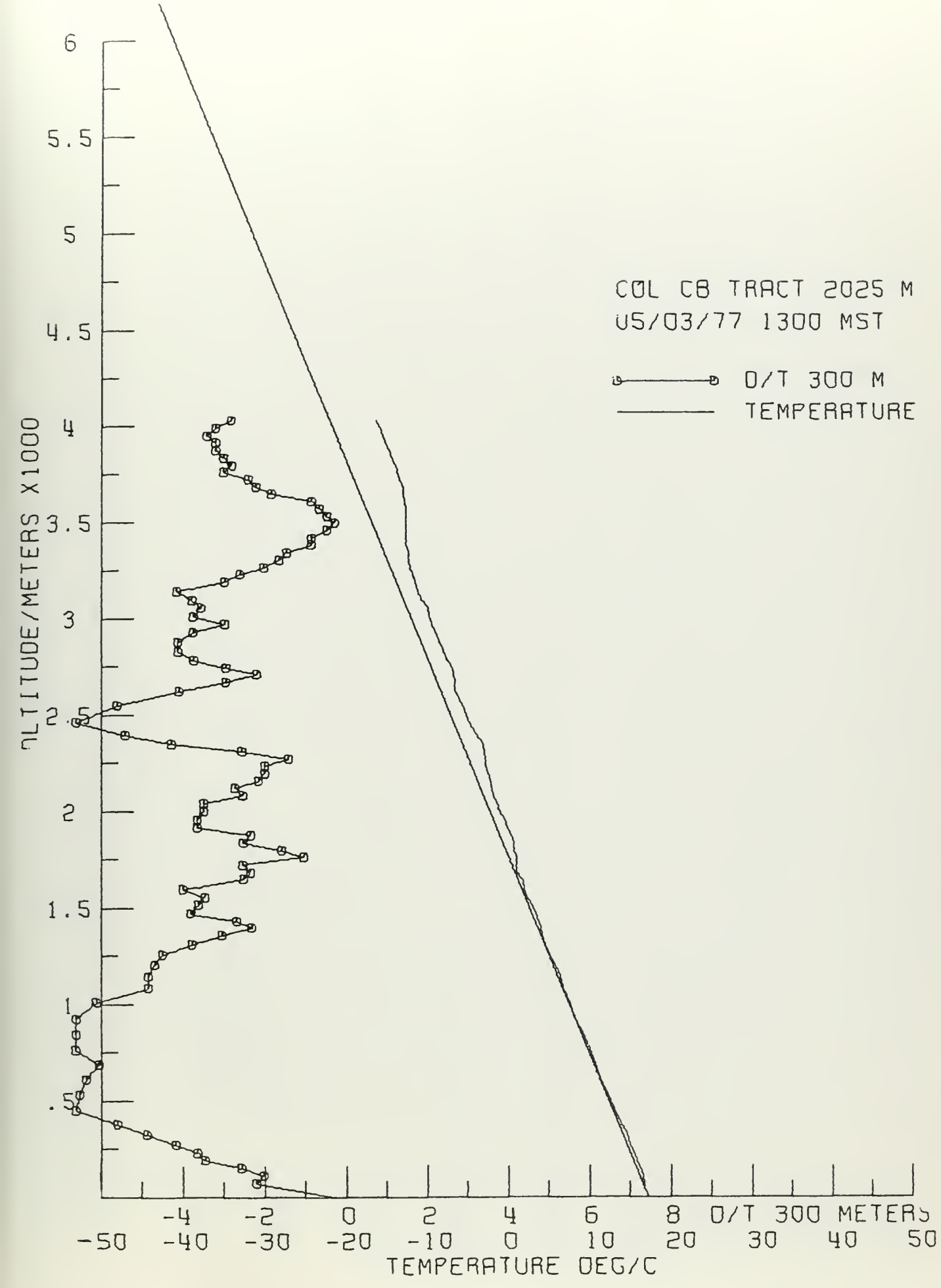
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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05/03/77 1300 MST
O/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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5.5
5
4.5
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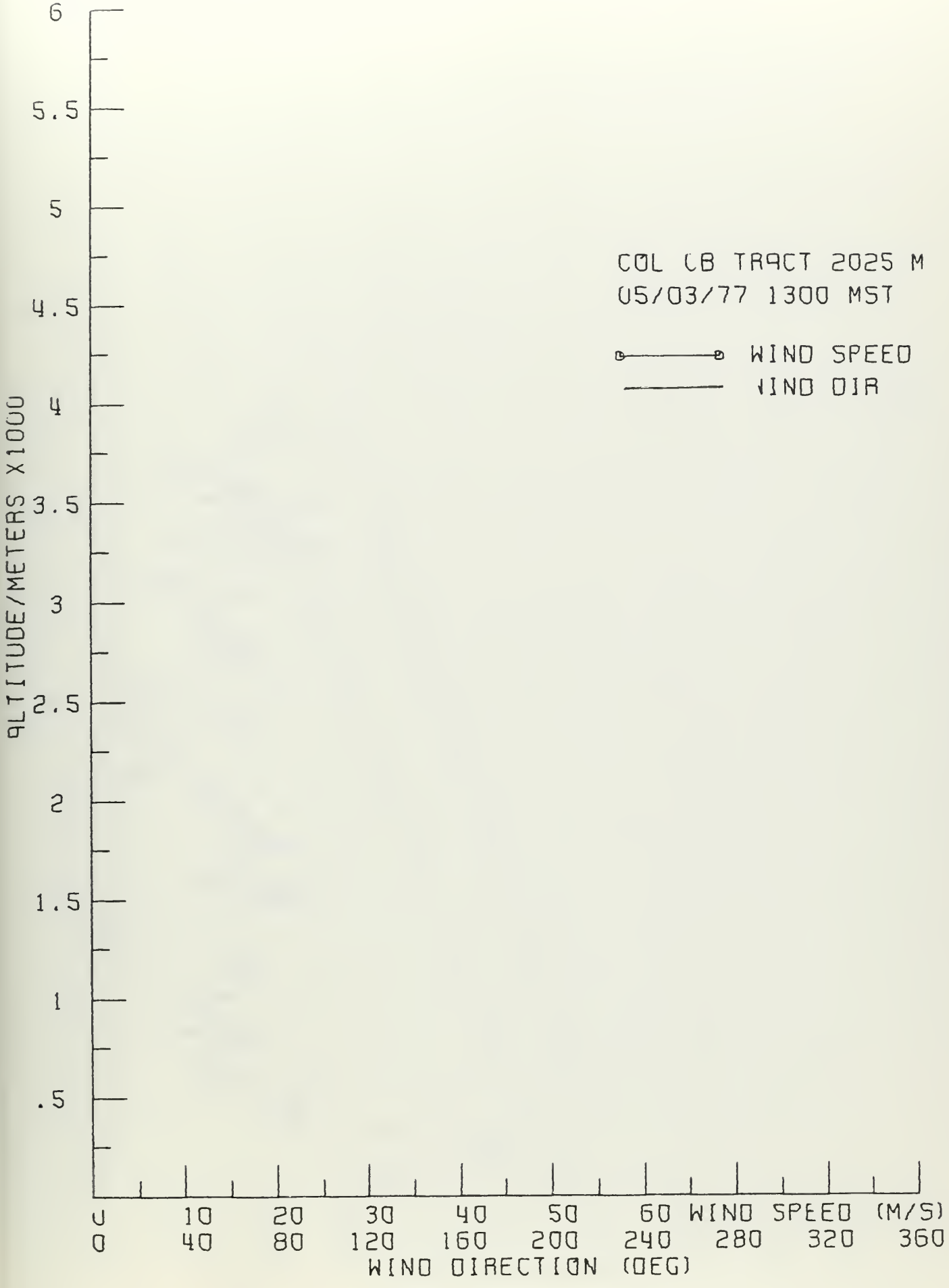
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
O/T 300 METERS
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C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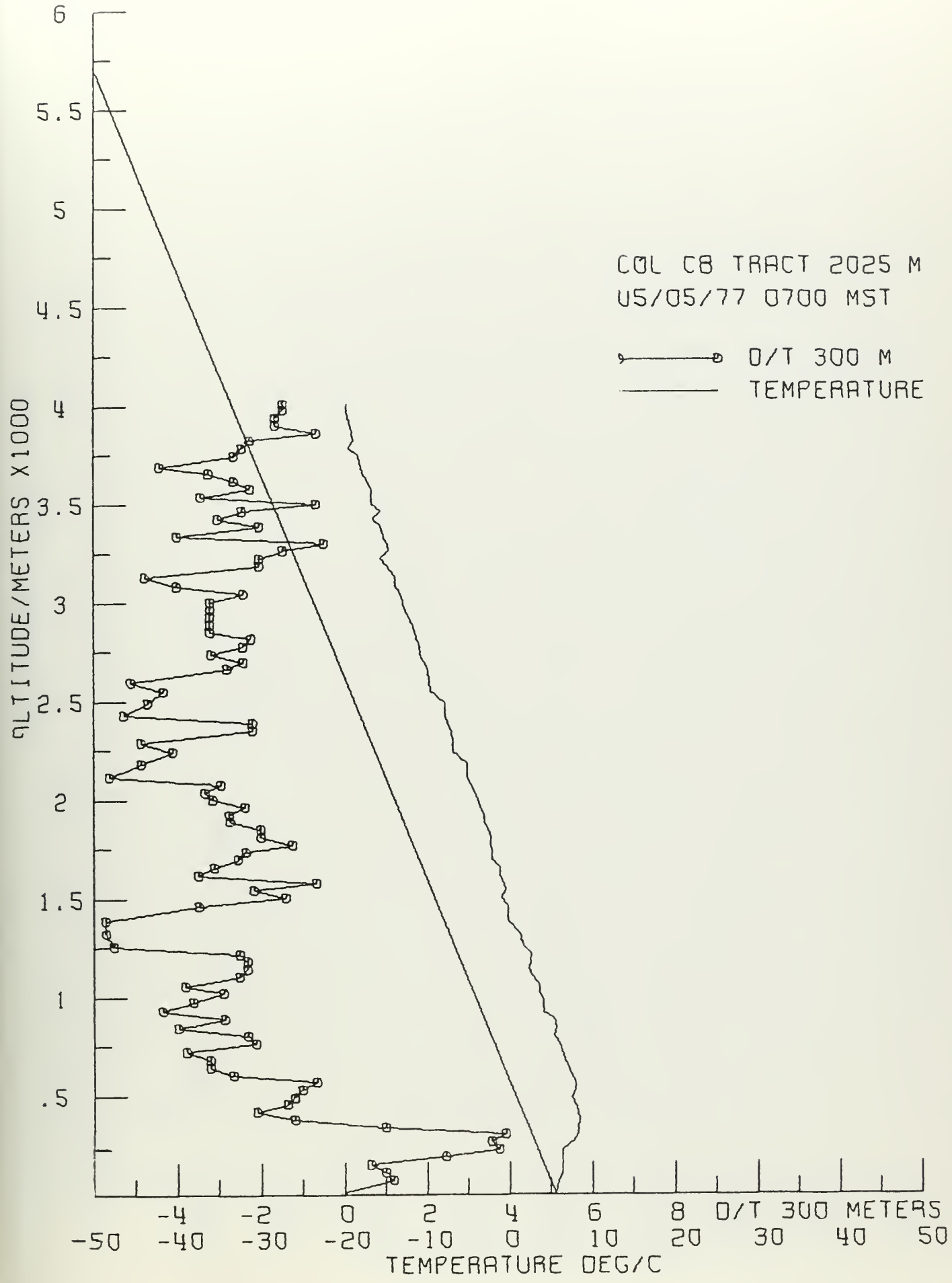
05/03/77 1300 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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05/05/77 0700 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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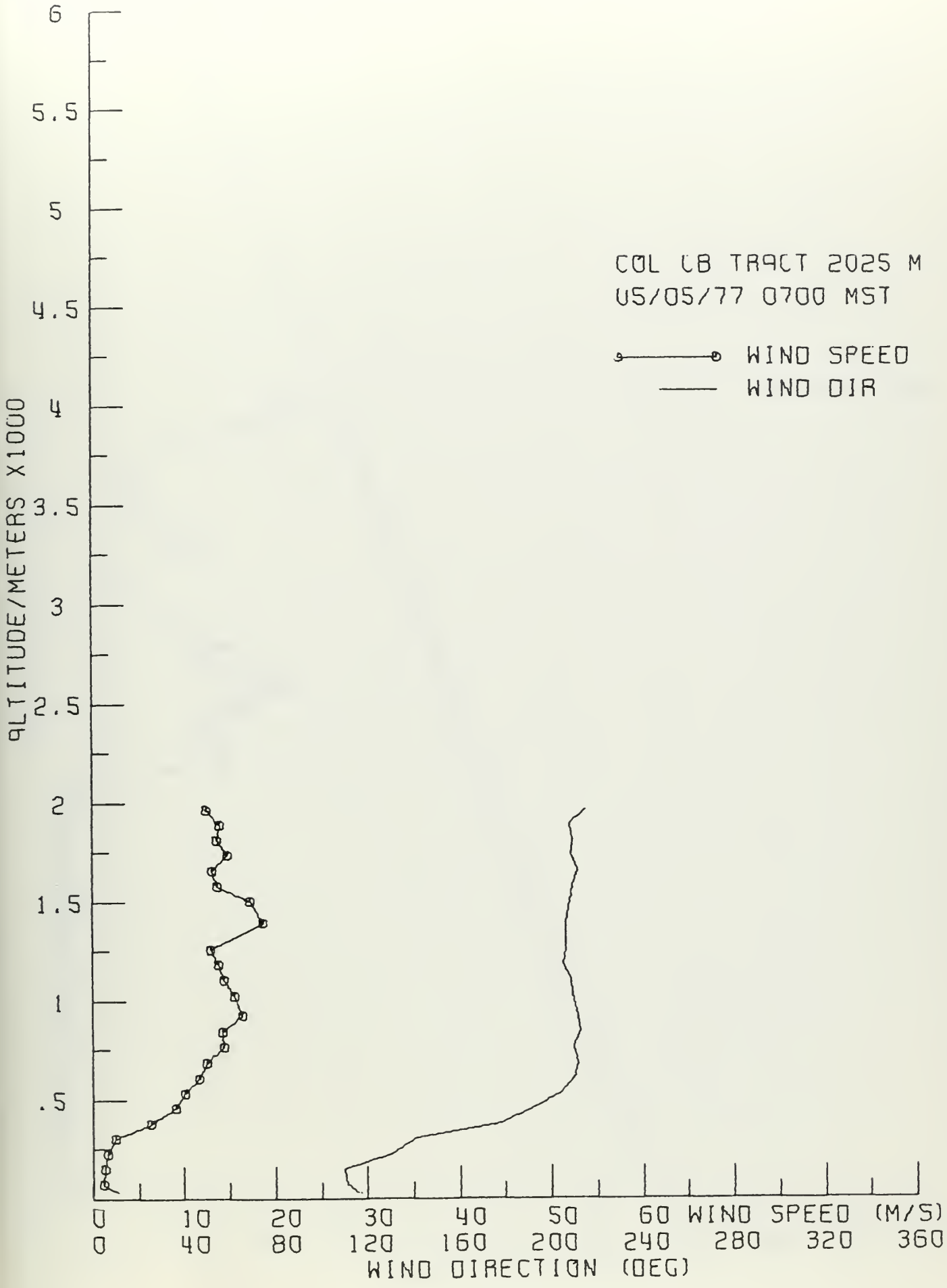
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 METERS
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C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05/05/77 0700 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
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1
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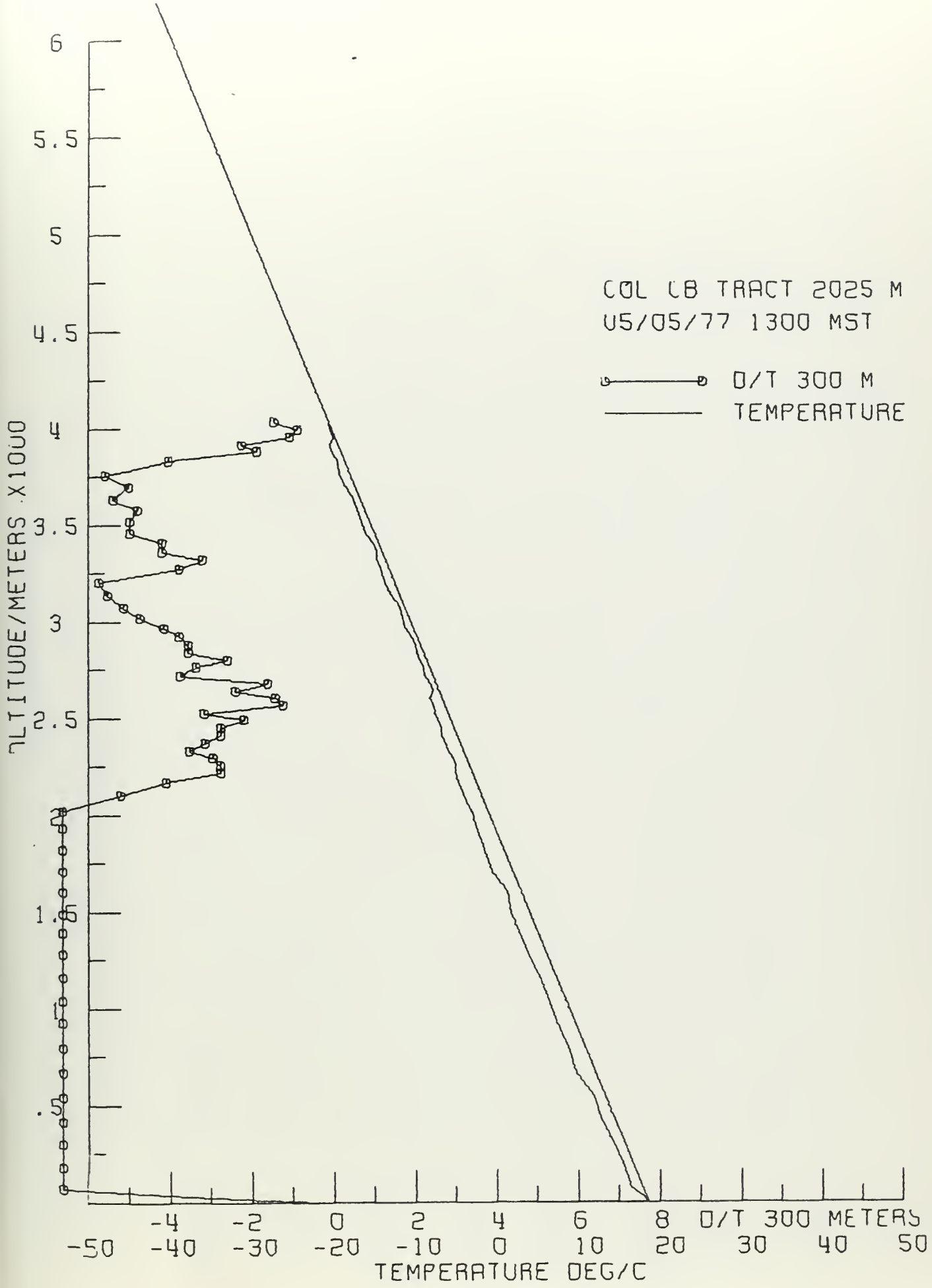
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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D/T 300 M
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ALTITUDE/METERS X1000
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4.5
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3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 METERS
-50
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-20
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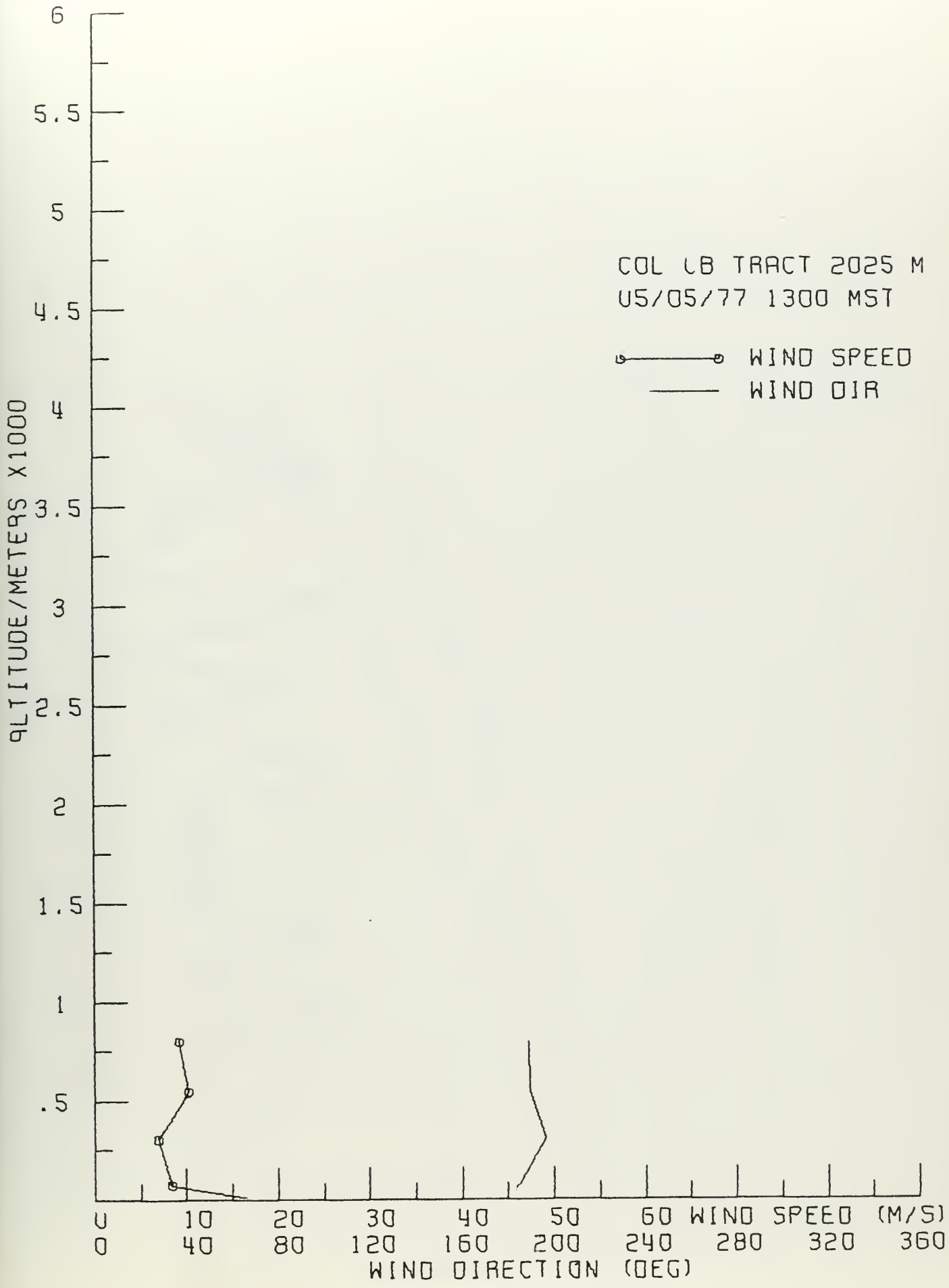
20
30
40
50
TEMPERATURE DEG/C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05/05/77 1300 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
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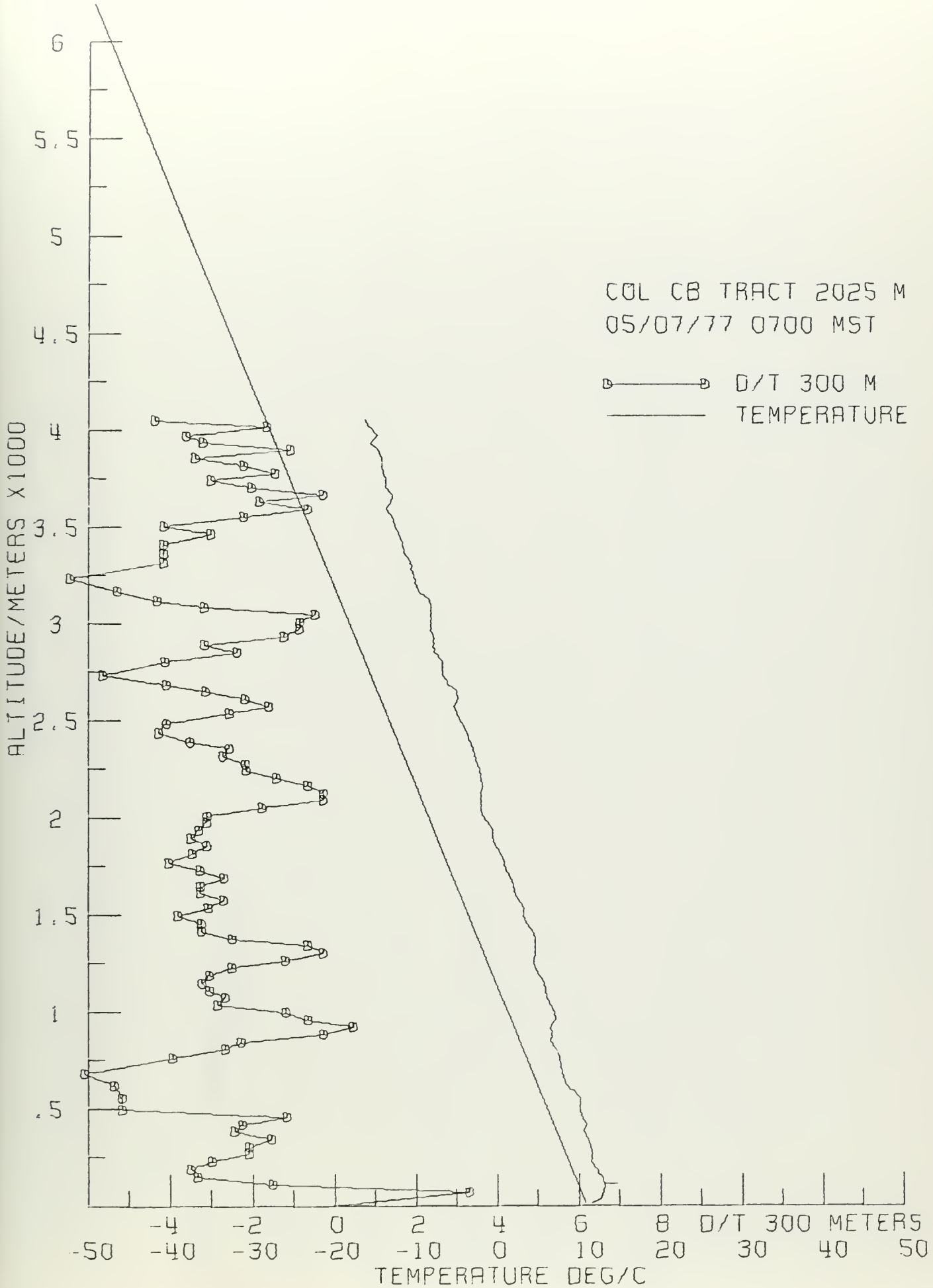
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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05/07/77 0700 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 METERS
-50
-40
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-20
-10
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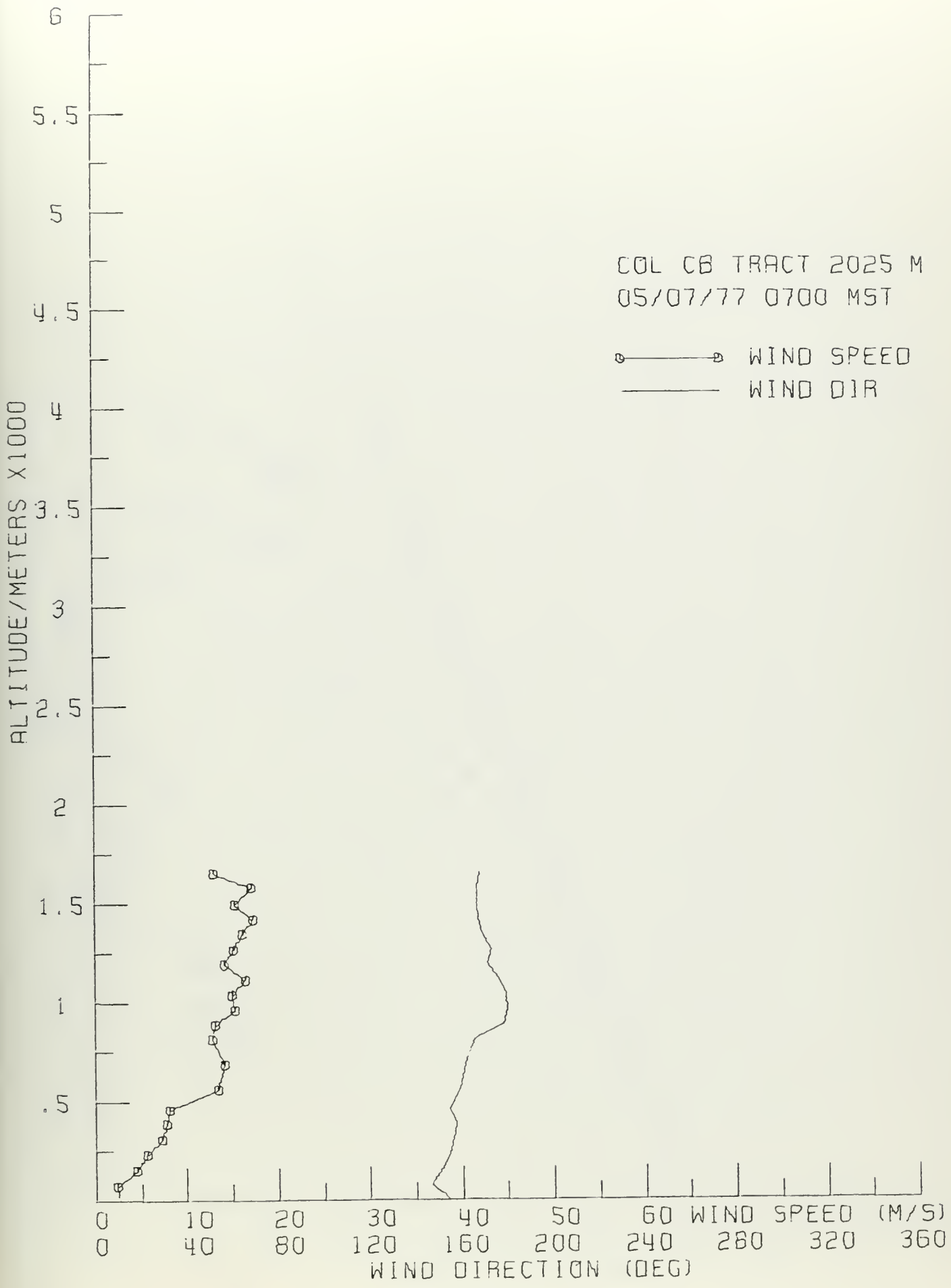
10
20
30
40
50
TEMPERATURE DEG/C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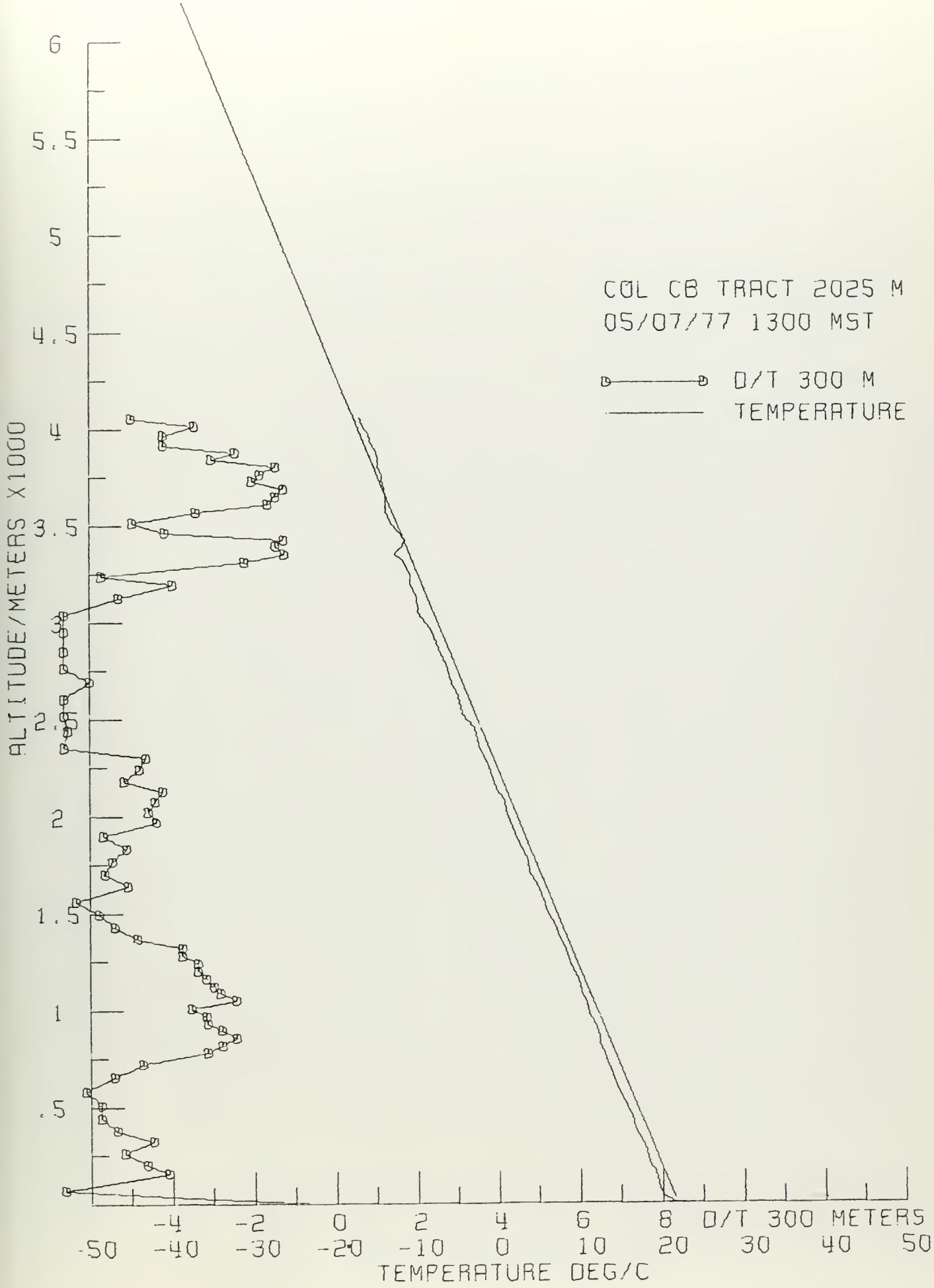
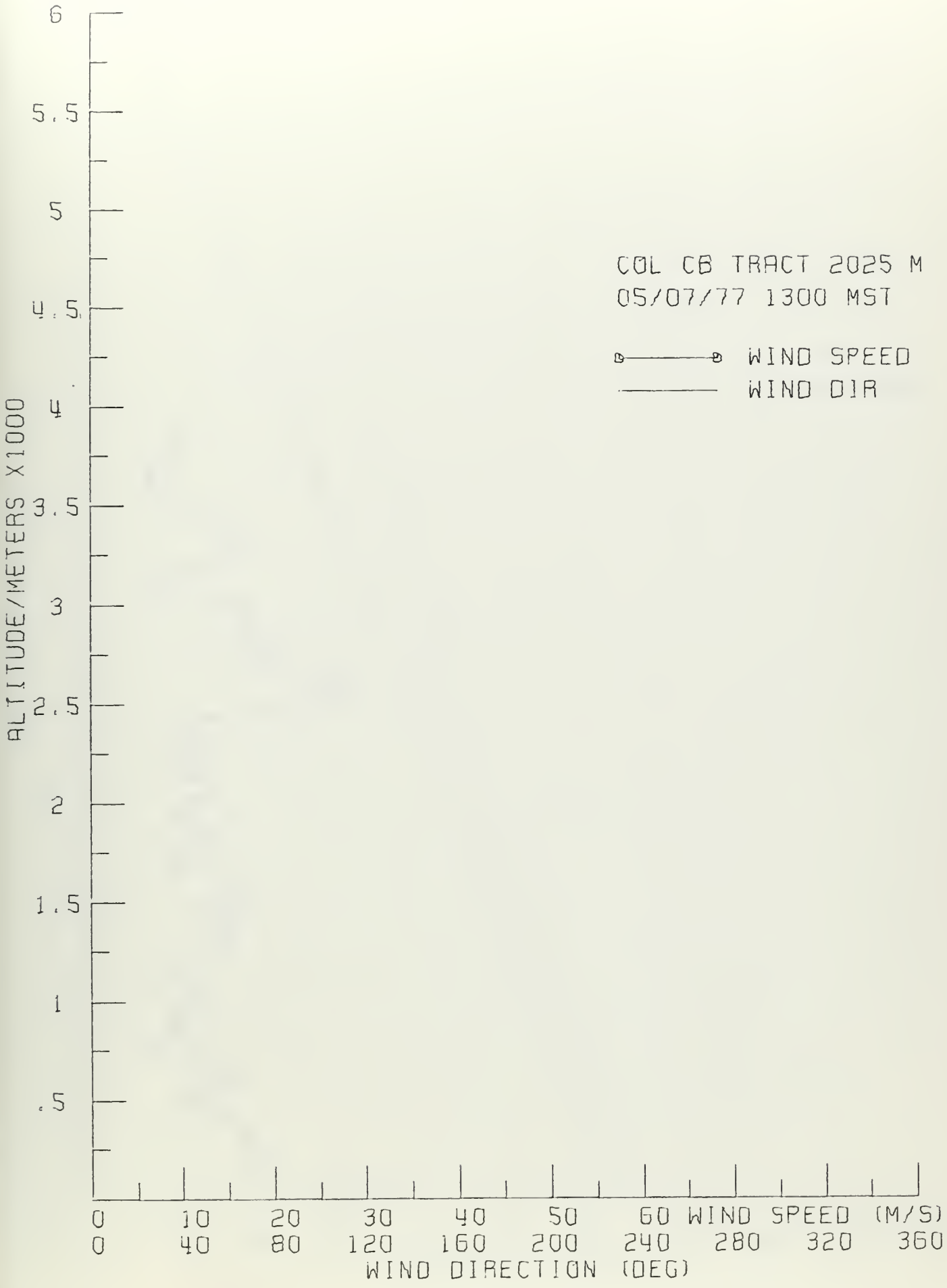
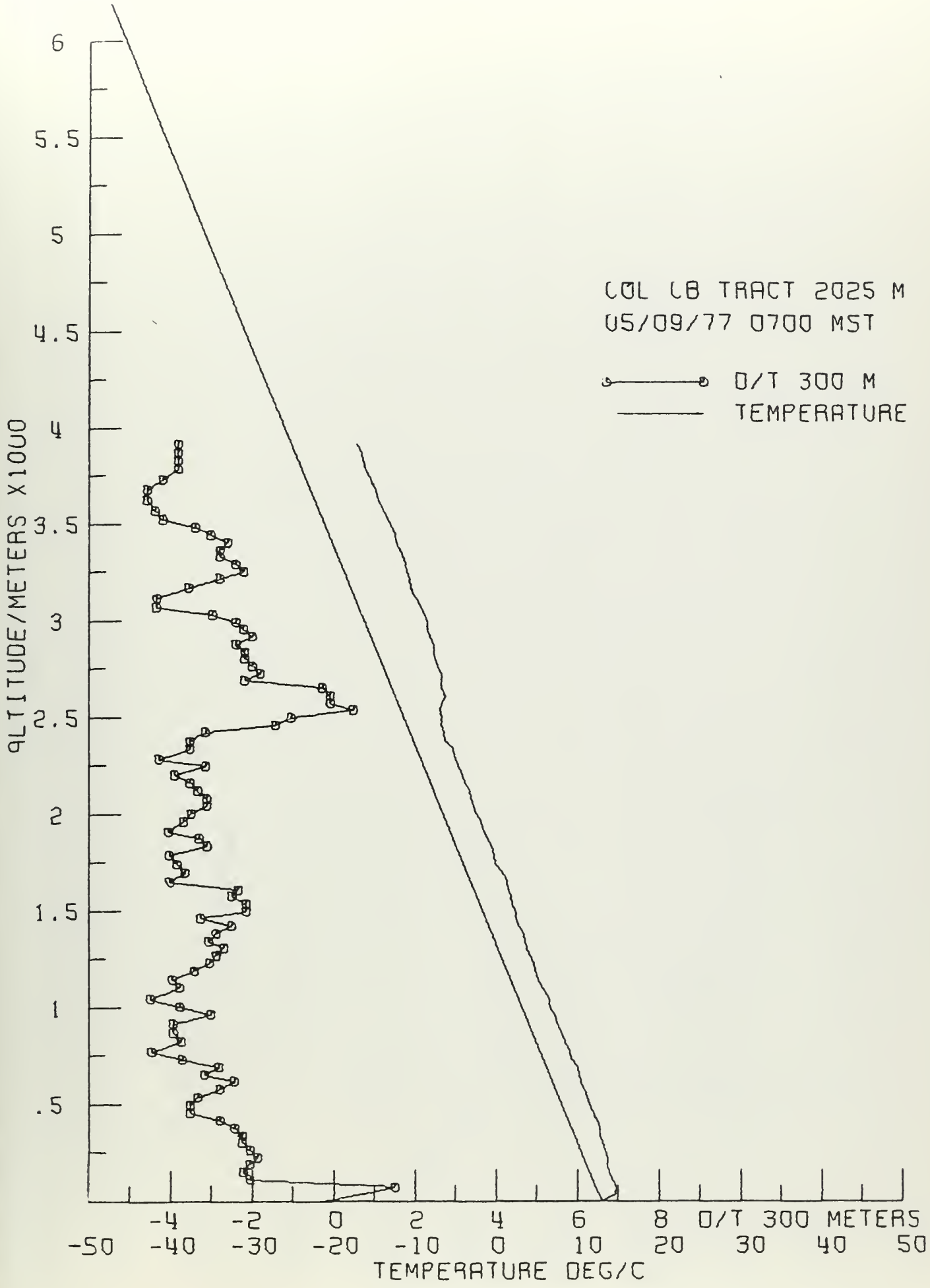
05/07/77 0700 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)


COL CB TRACT 2025 M
05/07/77 1300 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 METERS
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C


COL CB TRACT 2025 M
05/07/77 1300 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)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05/09/77 0700 MST
D/T 300 M
TEMPERATURE
ALTITUDE/METERS X1000
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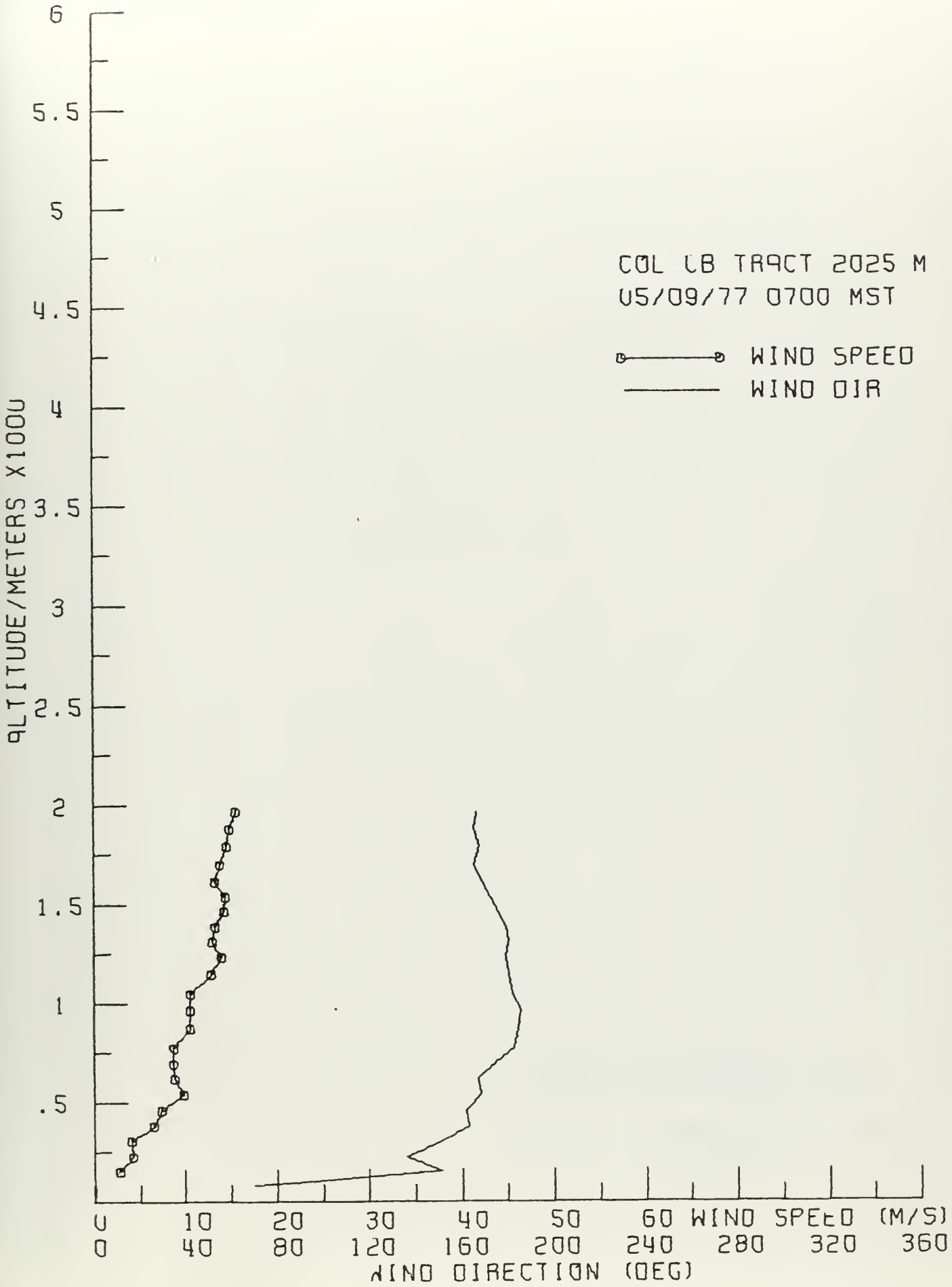
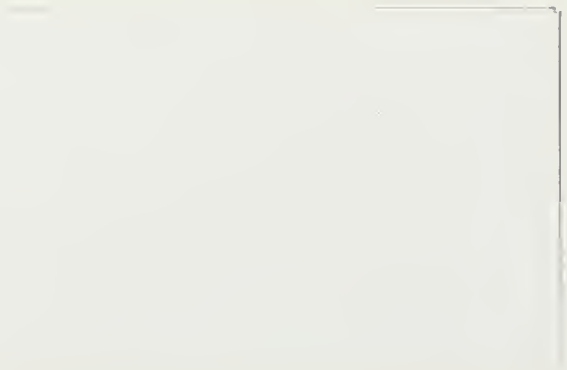
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
-4
-2
0
2
4
6
8
D/T 300 METERS
-50
-40
-30
-20
-10
0
10
20
30
40
50
TEMPERATURE DEG/C


COL LB TRACT 2025 M
05/09/77 0700 MST
WIND SPEED
WIND DIR
ALTITUDE/METERS X1000
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
.5
0 10 20 30 40 50 60 WIND SPEED (M/S)
0 40 80 120 160 200 240 280 320 360
WIND DIRECTION (DEG)

aeromet



aeromet inc.

P.O. BOX FF NORMAN, OKLAHOMA 73070

405 329-2424

Form 1279–3
(June 1984)

BORROWER'S CARD

TN R59 .C64 C3758 no.1

Monthly progress repor
... for the period ..

DATE LOANED	BORROWER

USDI – BLM